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Source: Space Frequency Coordination Group (SFCG)

Comments to the proposed revision of the Commission's Rules Regarding Operation in the 57-64 GHz Band (ET Docket No. 07-113 RM-11104)

Background

The Space Frequency Coordination Group (SFCG) is an organization created 27 years ago. It federates all the main civilian space agencies of the world. It deals with aspects related to frequency management for the satellite missions of the various member agencies. The current member agencies are: ASI (ITA), BNSC(UK), CAST(CHI), CMA(CHI), CNES(FRA), CONAE(ARG), CSA(CAN), CSIRO(AUS), DLR(GER), ESA, EUMETSAT, INPE(BRA), INSA(SPA), INTA(SPA), ISRO(IND), JAXA(JAP), KARI(KOR), NASA(USA), NIVR(NED), NOAA(USA), NSA(MAL), NSAU(UKR), NSPO(TW), SSC(SWE), RFSA(RUS). Observers: WMO, IUCAF, ITWG, CCSDS, GRSS, ITU-R[1].

At its annual meeting in September 2007, the SFCG was informed by the GRSS representative about the existence of an FCC NPRM proposing to increase the emission limits for unlicensed devices operating in the frequency range 57-64 GHz.

Reasons for concern

The band 57-64 GHz partly overlaps with the band 57-59.3 GHz where, among other services, EESS(passive) and SRS(passive) have a co-primary allocation.
This frequency range is operationally used already since many years for high altitude microwave sounding instruments like AMSU (Advanced Microwave Sounding Unit). Several meteorological space agencies in the world operate this kind of instruments. For the US, NOAA operates

[1] Further information on SFCG can be found at www.sfcgonline.org

satellites with these sensors. The channels in this frequency range are critical for upper tropospheric, stratospheric, and mesospheric temperature profiling. These measurements are an essential element in the weather forecast that each one of us consults from TV or from internet in his daily life.
An important element to be noted is that the weather dynamics are such that any wrong measurement due to RF interference has an impact on the correctness of the forecast also for other countries than the one in which the interference signal was generated. EESS(passive) is a truly "international" service. It relies on the global correctness of all the measurements to evaluate the weather evolution pattern for the various meteorological centres of the world.

A complex reallocation took place at WRC-97 in the range 50-71 GHz, to identify where and how terrestrial services, EESS (passive) and the intersatellite service could share the range in an optimal way.
A number of SFCG agencies were heavily involved in the preparatory work at national, regional and ITU-R level that lead to this reallocation.
Key elements in the sharing analysis were the assumptions made about the technical characteristics of the terrestrial services that would operate in this range and their expected density of deployment. On that basis some bands were allocated in co-primary to terrestrial and satellite passive services. At the time, given the atmospheric attenuation in this frequency range, it was assumed that relatively low-power short-range devices were going to be the main terrestrial users in this band.

On the basis of all what said above, SFCG members would like to express their strong concern for this FCC proposed rule making. Looking at the FCC NPRM, no analysis whatsoever is made there about the issue of sharing with EESS(passive). Sharing considerations are only given with respect to other unlicensed terrestrial devices. Also the decision to propose changes to the national regulations when international services could be impacted is a source of great concern.

Of course SFCG is willing to properly study the issue without any prejudgement on the possible results. The relatively high atmospheric attenuation at these frequencies may allow these changes without impact on EESS(passive).
But unfortunately the:

- late awareness by SFCG of this national initiative,
- the proximity of the deadline and
- the lack of some technical parameters for the sharing analysis

do not allow SFCG to conclude if these regulatory changes would impact the EESS measurements in the band or not. Because of this, SFCG would like to ask FCC to provide some necessary additional information as detailed below, in order to perform proper studies.

The principle of the calculations that will be used for these studies is to compute the value of the received power at the EESS satellite antenna derived from the aggregation of the transmitted devices within a pixel (satellite footprint) of an EESS satellite and to compare this received result with thresholds contained in appropriate ITU-R Recommendations. In order to make this calculation, it would be necessary to know:

- the density of transmitters per km^2 within urban and rural areas;
- the RF characteristics of the transmitters around 60 GHz : RF power, description of the antenna pattern, max elevation angles;
- the maximum height above sea-level at which these devices will be deployed.

Conclusions

In summary the SFCG would like to ask the FCC:

1. To consider the international nature of the EESS(passive) service and therefore allow (and invite) studies to be made in the proper international fora before a decision is taken. Ideally these would be WP 9D and WP 7C of the ITU-R.
2. To provide the additional technical parameters indicated above, that are necessary for these sharing studies.

Respectfully submitted,

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